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EXAMINER	
BRUTUS, JOEL F	

ART UNIT	PAPER NUMBER
3768	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/589,050	OHMURO ET AL.	
	Examiner	Art Unit	
	JOEL F. BRUTUS	3768	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 June 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20,23 and 24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20,23 and 24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *5/19/2009*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 1-16 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Regarding claims 1 and 13, the step of selecting a measuring method is non statutory because selecting could be thinking about getting better result with the other mode. A human operator can change the method by thinking the other method would be more appropriate to a current measurement. The selecting step implies having “Human” and “thinking” which are not patentable. Appropriate correction is required.

Regarding claims 2-12 and 14-16, they are rejected for the reason above because they depend on 1 and 13.

Claims 19-20 are rejected under 35 U.S.C. 101 because they fail to provide steps of a method, instead the claims refer to “a function of”.

Claims 19-20 are also rejected under 35 U.S.C. 112, second paragraph because they aren’t specifically directed to neither a storage medium nor a program for executing a method steps.

For purpose of examination, these claims are treated as a program of executing a method steps.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-20 and 23-24 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: "A measuring step".

Regarding independent claims 1, 13 and 19-20, the first step of the method is to: "determining whether a current measuring method is a pulse Doppler or a transit time method" but fails to claim a measuring step.

Regarding claims 2-12 and 14-16, they are rejected for the same reason above because they depend on claims 1 and 13.

Regarding claims 17, 23-24 and 18, they are rejected because they fail to measure a flow. Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 23 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Jacobson et al (US Pat: 4,787,252).

Regarding claims 1, 23 and 17, Jacobson et al teach a flow meter that includes a mode selector operative to select one of two or more operating modes based upon analysis of the processed received signals, so as to Perform a processing regimen which best extracts information from the detected signal under existing conditions [see column 8 lines 50-55 and see figs 1-4] that anticipates the claimed invention. Jacobson et al further teach a processor that starts operation in a first or START mode designated MODE 1 which will generally be a transit time measurement mode as described above with reference to FIGS. 1-3 [see column 8 lines 58-67 and column 9 lines 1-3]. As shown in FIG. 4, the mode selector 50 starts in the start mode 52 and transmits one or more signals, e.g., upstream and downstream transmission signals T, at 54. Then, in accordance with its stored data, it sets a reception window for sampling and processing received signals 56. During the receive window a preliminary determination 58 (is made whether a signal was received. If not, the mode selector 50 switches mode at 60 to effect a different processing protocol which may be more amenable to measuring the actual flow conditions [see column 9 lines 4-13]. This implies the step of determining reliability of the current method and also selecting a measuring method different than the transit time mode (emphasis added).

Jacobson et al teach the received signal from line 30 is Processed to derive timing and/or frequency shift information necessary for the determination of flow rate, or of medium temperature or other characteristic of the medium. This is accomplished by a signal sampling unit 32 and microprocessor 34. Signal sampling unit 32 includes an analog to digital converter 36 which receives the amplified gain-stabilized received

signal along line 30 and provides digitized values thereof to a RAM 38. A direct memory access controller 40 responds to timing and synchronization signals provided by the timing module 16, and accesses the stored digitized values, providing them along data bus 42 to the microprocessor 34. Processor 34 processes the digitized sampled received signal and correlates it with the transmitted signal to determine basic timing or frequency information. This information is then converted in a known way to a flow rate or other measurement. In this connection a keyboard, display and I/0 section 35 allows user entry of system parameters which determine selection of the appropriate formulae and display of measurement results [see column 4 lines 15-36].

Line A of FIG. 3 shows a basic transmission wave form employed in a prototype embodiment of the present invention, having a one MHz sinusoidal form. In accordance with one aspect of the invention, the transmission wave form is modulated with a digital Pseudo-noise (PN) code so as to produce a transmission signal with high information content [see column 4 lines 44-50].

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 2-16, 18-20 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobson et al (US Pat: 4,787,252) stand alone and/or in view of Akiyama (US Pat: 5,557,148).

Regarding claim 2, all other limitations are taught as set forth by the above teaching. Jacobson et al also teach once a set of flow values has been derived, the processor computes the standard deviation o of the derived values of the parameter, and compares it to a threshold acceptable level of variation [see column 9 lines 41-60].

Jacobson et al don't specifically mention to select a different method if the reliability index value is smaller than the set value.

However, Jacobson et al teach an acceptable range may be, for example, ten percent. Based upon this comparison, at 74, the mode selector 50 either selects another mode, or delivers the measured data as an output and continues performing flow measurements in the existing mode. Specifically if sigma exceeds the threshhold, indicating jittery derived data, the selector selects the next Processing mode, and a new regimen of signal analysis recommencing at step 62, or a retransmission and correlation commencing at step 54, are made to obtain a better flow measurement Where the received signals were well defined but their information content erratic due to intervening flow conditions, the same set of stored received signals may alternatively be sorted and processed with a fast Fourier transform calculation to derive frequency data which may be more strongly correlated with the transmitted signals [see column 9 lines 41-60].

Alternatively, if at step 74 sigma has been determined to be acceptable, the existing mode is deemed to produce meaningful data and the derived flow parameter measurements are simply delivered as an output along line 70, with the processor continuing to run in the existing processing mode. In this case, at 76 control returns to initialize the data transmission and reception cycle for another round of measurements [see column 9 lines 62-67].

Akiyama teaches establishing a threshold in advance for reception time signal [see column 9 lines 10-20]; measurement mode for measuring flow rate of a fluid based on a reference value established by a first self learning capability [see column 9 lines 54-60]; sequential approximating means [see column 8 lines 28-31]; time difference detector, a counter, comparator, control circuit [see fig 9]. The ultrasonic flow meter includes an abnormal signal detector [see column 8 lines 45-49]; a comparator that compares a reception signal and predetermined level signal and it used to indicate the operation of a first learning capability [see column 10 lines 49-56]; predetermined level signal generator, statistical processor [see column 10 lines 54-57]; confirming through control circuit whether waveforms have been counted given number of times for predetermined level signals, count array means [see column 10 lines 54-65].

Therefore, one with ordinary skill in the art at the time the invention was made would have been motivated to modify the Jacobson et al reference by setting a threshold so that if the derived value is smaller than the threshold and/or combining Jacobson et al and Akiyama et al reference by using the teaching of establishing the threshold in advance as taught by Akiyama to select a different mode or measuring

method; in order to provide a better evaluation and to select the flow measurement that would provide the best possible flow measurement.

Regarding claims 13, 24 and 18, all other limitations are taught as set forth by the above teaching.

Jacobson et al don't explicitly mention obtaining an index value of each method and selecting a measuring method having a larger value of index.

However, Jacobson et al teach a microprocessor that set ups a threshold-selection approach [see column 7 lines 19-30]. Making a determination by comparing correlation value; the threshold value may be a variable value [see column 7 lines 32-36].

Therefore, one with ordinary skill in the art at the time the invention was made would have been motivated to modify the Jacobson et al reference by using the microprocessor as taught by Jacobson et al and assign an index value to the Doppler mode and transit time mode, comparing (Jacobson et al teach comparison [see above] these values and select the method with the larger value; in order to evaluate the procedure and to make necessary modifications by selecting the best possible method.

Regarding claim 3-8, and 14-15, all other limitations are taught as set forth by the above teaching. Jacobson et al further teach fast Fourier transform calculation to derive frequency data which may be more strongly correlated with the transmitted signals [see column 9 lines 41-60]. A flow meter digitizes a received signal and

performs one or more correlations between the transmitted and received signals to derive flow information, including, for example, signal transit time. The digitized received signal is sampled in accordance with a clock aligned with the transmitted signal, and a plurality of the received signal values are then subjected to a fast Fourier transformation to determine coefficients for each of a plurality of component frequencies making up the received signal. A received signal frequency component of greatest magnitude is then compared to the frequency of the transmitted signal, to ascertain its Doppler shift, and the Doppler shift is converted to a flow output [see column 11 lines 58-68 and column 12 lines 1-5].

Jacobson et al don't explicitly teach a predetermined power value; predetermined amplitude value associated with a ratio.

However, Jacobson et al teach a microprocessor that set ups a threshold-selection approach [see column 7 lines 19-30]. Making a determination by comparing correlation value; the threshold value may be a variable value [see column 7 lines 32-36].

Jacobson et al teach transmitted signal is provided by a transmission signal generator 22, the output of which is amplified by a power amplifier 24 and connected through the multiplexer 12 to an appropriate one or more of the transducers 2,3. Similarly, the received signal is connected through the receiver multiplexer 14 to a receiver amplifier 26 having an automatic gain control loop 28 so as to provide a conditioned output signal on line 30 representative of the received signal. The gain is

controlled to be within the input range of an analog-to-digital converter [see column 4 lines 2-13 and see fig 3 and 5].

Therefore, one with ordinary skill in the art at the time the invention was made would have been motivated to modify the Jacobson et al reference by using the Fast Fourier transform as taught by Jacobson et al above to obtain index value as a ratio of a power spectrum of a Doppler frequency and the microprocessor to set a predetermined power and amplitude value associated with the ratio; for the purpose of evaluating flow signal with accuracy and to switch to the measurement flow method that would provide a better flow measurement.

Regarding claims 9-12, all other limitations are taught as set forth by the above combination. Jacobson et al teach in general, the received signal will include energy scattered from various positions within the flowing medium, and thus will contain information about particulate or bi-phase matter entrained at different flow velocities at different points in the medium. Accordingly, to isolate a received signal having as primary components the reflected energy from a station of interest in the flow path, the processor sets a data receive enable signal, shown in line C of FIG. 5. This enable signal defines a "window", and goes high during a desired sampling interval which starts slightly before the transit time of the transmitted signal to and from the desired station in the flow path. For example, to sample the flow at the center of a two-foot diameter conduit using a single transducer for the transmitted and reflected wave, and assuming a medium having a transmission velocity of 5000 feet per second, the

processor sets the receive enable window to open at approximately 0.4 ms following initiation of the transmission signal. In order to provide samples of the received signal from which sufficient flow information is recoverable, the width of the window is set at least equal to the period of the Doppler frequency corresponding to the lowest anticipated flow rate, and the received signal is then sampled at a sampling rate at least equal to twice the Doppler shift corresponding to the highest anticipated flow rate. For the 20 Hz to 2.5 kHz range of Doppler shifts in the example described above, a sampling interval of 50 milliseconds is used, and samples are taken of the received signal at a 5.12 kHz sampling rate [see column 12 lines 22-50].

Jacobson et al don't explicitly mention counting the number of the correct measurement points and change the method is the number is smaller than a threshold.

However, Jacobson et al teach change the existing method to a different mode if exceeds a predetermined value; Alternatively if at step 74 sigma has been determined to be acceptable, the existing mode is deemed to produce meaningful data and the derived flow parameter measurements are simply delivered as an output along line 70, with the processor continuing to run in the existing processing mode. In this case, at 76 control returns to initialize the data transmission and reception cycle for another round of measurements [see column 9 lines 62-67].

Therefore, one with ordinary skill in the art at the time the invention was made would have been motivated to modify the Jacobson et al reference by count the number of measurements and compare it to a threshold that would set by the

microprocessor; in order to provide meaningful evaluation of the current flow measurement method.

Regarding claims 19-20, all other limitations are taught as set forth by the above teaching.

Jacobson et al don't explicitly mention a computer readable medium with a program to execute the method steps.

However, Jacobson et al a microprocessor capable of running a program such as the method claimed (emphasis added), a RAM, a memory [see column 4 lines 15-36].

Therefore, one with ordinary skill in the art at the time the invention was made would have been motivated to use the RAM and/or the memory to store a program a set of program codes executing the steps of the method as claimed that can be run by the microprocessor as taught by Jacobson et al; for the purpose of having the information available for later use in doctor's office, clinics, nursing homes etc...

Response to Arguments

9. Applicant's arguments with respect to claims 1-20 and 23 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOEL F. BRUTUS whose telephone number is

(571)270-3847. The examiner can normally be reached on Mon-Fri 7:30 AM to 5:00 PM (Off alternative Fri).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on (571)272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. F. B./
Examiner, Art Unit 3768

/Long V Le/
Supervisory Patent Examiner, Art Unit 3768